CLAIMS

1. Method of controlling a voltage controlled PWM (Pulse Width Modulated) frequency converter comprising a single phase rectifier bridge (10) connectable to a sinusoidal single phase supply, a DC intermediate circuit (11) and a controlled inverter bridge (12) for generating an AC output voltage with varying amplitude and frequency to a load,

said inverter bridge (12) having PWM controlled semiconductor switches (V11-V16) and flywheel diodes (D11-D16) connected in inverse-parallel with the semiconductor switches,

wherein the DC intermediate circuit (11) is provided with a DC capacitor unit, and

wherein the frequency converter is controlled so that the supply line current (I_{in}) is essentially sinusoidal and in phase with the supply line voltage (U_{in}),

characterized in that

the inverter bridge is controlled so that the curve of filtered average current (I_{dc}) in the DC intermediate circuit follows essentially the curve of the rectified AC supply voltage (U_{dc}), and

the rectifier bridge is (10) connected to the inverter bridge (12) directly without a DC capacitor unit acting as an intermediate energy storage, and

the curve of the power fed to the load has essentially the form $\sin^2(2 \pi f t)$ (f = line frequency t = time).

2. Method as defined in claim 1, **characterized** in that the DC capacitor unit with a low capacitance value is used in order to limit the voltage spikes produced in switching situations.

3. Method as defined in claim 1, **characterized** in that two phase switches of the inverter bridge are connected to a single phase motor windings and the third phase switch is used to produce a sufficient start torque through the third phase winding in order to avoid a use of a separate start capacitor in the motor.

4. A voltage controlled PWM (Pulse Width Modulated) frequency converter comprising a single phase rectifier bridge (10) connectable to a sinusoidal single phase supply, a DC intermediate circuit (11), a controlled inverter bridge (12) for generating an AC output voltage with varying frequency to a load and a PWM controller unit (14),

said inverter bridge (12) having PWM controlled semiconductor switches (V11-V16) and flywheel diodes (D11-D16) connected in inverse-parallel with the semiconductor switches,

wherein the DC intermediate circuit (11) is provided with a DC capacitor unit, and

wherein the PWM controller unit (14) controls the frequency converter so that the supply line current (I_{in}) is essentially sinusoidal and in phase with the supply line voltage (U_{in}),

characterized in that

the PWM controller unit (14) controls the inverter bridge so that the curve of filtered average current (I_{dc}) in the DC intermediate circuit follows essentially the curve of the rectified AC supply voltage (U_{dc}), and

the rectifier bridge is (10) connected to the inverter bridge directly without a DC capacitor unit acting as an intermediate energy storage, and

the curve of the power fed to the load has essentially the form $\sin^2(2 \pi f t)$ (f = line frequency t = time).

5. A voltage controlled PWM (Pulse Width Modulated) frequency converter as defined in claim 4, **characterized** in that it comprises a DC capacitor unit with a low capacitance value for limiting the voltage spikes produced in switching situations.

6. A voltage controlled PWM (Pulse Width Modulated) frequency converter as defined in claim 4, **characterized** in that it comprises a filter unit consisting of inductors with a low inductance value and capacitors with a low capacitance value on the supply line side to filter off high-frequency harmonics from the supply current.

7. A voltage controlled PWM (Pulse Width Modulated) frequency converter as defined in claim 4, **characterized** in that two phase switches of the inverter bridge are connected to a single phase motor windings and the third phase switch is used to produce a sufficient start torque through the third phase winding in order to avoid a use of a separate start capacitor in the motor.